| Work Ord<br>Wednesday, Jun                 |                      |   |                                | *120       | 135*                |        |              |              |            |            |                  | Page 1            | 1           |
|--|----------------------|---|--------------------------------|------------|---------------------|--------|--------------|--------------|------------|------------|------------------|-------------------|-------------|
| Item ID:<br>Revision ID:                   | D3488-042            |   | ,                              | Accept     | *N900               | 0040   | 100          | <b>N</b> *   | Setup      |            | 17               | S1*               | <del></del> |
| Item Name:                                 | Blade Fitting        | g RH  |                                |            |                     |        |              |              |            | Stop       | *N               | S2*               |             |
| Start Date:<br>Required Date<br>Reference: | 6/04/14<br>: 6/04/14 | <b>Start Qty:</b> 12.00 <b>Req'd Qty:</b> 12.00 | *1 <i>9</i> *<br>*1 <i>9</i> * |            | Cust Item Customer: |        |              |              |            | <b>F</b> ( |                  |                   |             |
| Approvals:                                 | Process Pl           | lan: MUS  | Date: 14-06-05                 | Tooling:   | D                   | ate:   |              |              | Run        | Start      | *N               | R1*               |             |
| ••   | QC:                  |   | Date:                          | SPC (Y/N): |                     | ate:   |              |              |            | Stop       | *N               | R2*               |             |
| Sequence ID/<br>Work Center I              | D                    | Operation Description                           |                                | Set Up/    | Tool ID             | Tool # | Plan<br>Code | Accep<br>Qty | t Re<br>Qt |            | Reject<br>Number | Insp.<br>Stamp    |             |
| Draw Nbr                                   | Re                   | vision Nbr                                      |                                | ¥ /* ·     | 1,444               |        |              |              |            | ·          |                  |                   |             |
| D3488                                      | Re                   | v B   |                                | •          |                     |        |              |              |            |            |                  |                   |             |
| DSK 101                                    | RE                   | EV D  |                                |            |                     |        |              |              |            |            |                  |                   |             |
| 100  |                      |   |                                | 0.00       |                     |        |              |              | /          |            |                  |                   |             |
| *100*<br>Doosan                            | 1                    | DOOSAN LATHE  Memo                              |                                | 0.00       | . •                 |        | i            | (D           |            | <u> </u>   |                  | DAS<br>25<br>9-89 | 4-6-6       |
| Doosan Lathe                               |                      | 1-Turn as pe                                    | r Dwg DSK 101 & Folio FA       | A625       |                     |        |              |              |            |            |                  |                   | í           |
|  |                      | 2-Deburr  |                                |            |                     |        |              |              |            |            |                  |                   | •           |
| 110  |                      | QC2- Inspect parts off ma                       | achine FAI/FAIB                | 0.00       |                     |        |              |              | _          |            |                  | DAS               | No.         |

0.00

Memo

\*110\* <sub>QC</sub>

Quality Control

|                          |                | 11            |                                       |                             | ,        |   |         |                   |                          |            |              | •.                                      | _                  |
|--------------------------|----------------|---------------|---------------------------------------|-----------------------------|----------|---|---------|-------------------|--------------------------|------------|--------------|---|--------------------|
| DQA:                     | $\mathfrak{A}$ | WY            | Date:                                 | 14/0                        | 10/8     | •                                       |         |                   |                          |            |              |   | *DART              |
|                          | 1              | $\mathcal{A}$ |                                       | 11                          | 711      | WORK ORDER NON                          | -CC     | NFO               | RMANCE / UPI             |            |              |   | AEROSPACE          |
| QA Closed:               |                |               | Date:                                 | 14                          | _//      | δ                                       |         |                   |                          |            | ork Order up | date only                               |                    |
| Work Ord                 | er.            | 1201          | 7-                                    |                             |          | DISPOSITION                             |         |                   |                          | AGAINST DE | PARTMENT     | /PROCESS                                |                    |
| Work Ord                 | -              | 1001          | 70                                    | <del> </del>                |          | Rework                                  | 1       |                   | Skid-tube                | Crosstube  | 1            | Water Jet                               | Engineering        |
| Part                     | No. '          | 0348          | 8-64                                  | 7                           |          | Scrap 🗴                                 | 1       | 1                 | Machining 🔉              | Small Fab  | Pṛo          | d. Eng. Coor.                           | Quality            |
|                          |                | ,             |                                       |                             | -        | Use-as-is                               | ]       | Thern             | noforming                | Finishing  | Rec/Stor     | re/Packaging                            | Other              |
| NCR                      | No.            | 14-2          | 405                                   | $\mathcal{O}_{\mathcal{A}}$ |          | Suspected Unapproved                    | ]       |                   | Large Fab                | Composite  | ]            | Supplier                                |                    |
| Root                     |                |               | Ι "                                   |                             | Desci    | ription of work order update            |         | nitial            | Actio                    | ın         | Sign &       |   |                    |
| Cause                    |                | Date          | Step                                  | Qty                         | Desci    | or non-conformance                      | ı       | ief Eng           | Descrip                  |            | Date         | Verification                            | QC Inspector       |
| Design                   | Π              |               |                                       |                             | 100      | <u> </u>                                |         |                   |                          |            | ント           | - 2                                     |                    |
| Doc/Data                 |                | 14-6-22       | 100                                   | 1                           | 1 par    | t -2970 ou :306-                        |         | 9-89<br>12<br>0/8 | SIEDE                    | 62.1       | 14-6-22      | >M                                      |                    |
| Equip/Tooling            | Ш              |               |                                       |                             | 307      |   |         | 9-89              | SCRAP.  NOT FIT  INSERTS | -0 11      |              | 1 / / / / / / / / / / / / / / / / / / / | Sml?               |
| Handling/Pre             | Н              |               |                                       |                             |          |   |         |                   | Not tit                  | WITH       |              | )4/7/K                                  |                    |
| Material                 | X              |               |                                       |                             | 0.4      |   | 1       | 1/6/25            | INSTRAC                  |            |              |   | 14/06/25           |
| Operator<br>Offset/Setup |                |               |                                       |                             | KC.      | Operator Elever                         | '       | 1-1-              | ", " " "                 |            |              | -                                       |                    |
| Process A                | Н              |               |                                       |                             |          |   |         |                   |                          |            | ·            |   |                    |
| Supplier                 | $\vdash$       |               |                                       |                             |          |   |         |                   |                          |            |              |   |                    |
| Training                 | $\vdash$       |               |                                       |                             |          | •                                       |         |                   | ·                        |            |              |   |                    |
| Transport                |                |               |                                       |                             |          |   |         |                   |                          |            |              |   |                    |
| Unapproved               | П              |               |                                       |                             |          |   |         |                   |                          |            |              |   |                    |
| 2                        | ,              |               | · · · · · · · · · · · · · · · · · · · |                             | <u>*</u> | , | FAI     | JLT CA            | TEGORY                   |            |              |   |                    |
| Land                     | ing G          | iear          |                                       |                             |          | General                                 |         | _                 |                          |            |              |   |                    |
| 1.7                      |                | Bending       |                                       |                             |          | Bend                                    |         | Folio/F           | rogram                   |            | Outside Dim  |   | Pressure/Forced    |
|                          | Ш              | Centre No     | ot Concer                             | ntric                       |          | BOM/Route                               |         | Grain             |                          | <u> </u>   | Over/Under   | tolerance                               | Set-up             |
|                          |                | Cracks        |                                       |                             |          | Broken/Damage/Defect                    |         | Hardwa            | ire                      | ·          | Part Incorre | <del> </del>                            | Temperature/Cure   |
|                          | Ш              | Crimp/Kir     | nk/Ripple                             | /Wave                       |          | Burrs                                   |         | •                 | ion Incomplete/Unq       | 1          | Part Lost/Mi |   | Weld               |
|                          | Ш              | Cuffs         |                                       |                             |          | Contamination                           |         | 4                 | ions Incomplete/Un       | iclear     | Part Moved   |   | Wrong Stock Pulled |
|                          |                | Crushing      |                                       |                             |          | Countersink                             | <u></u> | 1 7               | ned/off center           | <u> </u>   | Positioned V |   | 7                  |
|                          | Ш              | Heat Trea     |                                       |                             | <u> </u> | Cut Too Short                           | <u></u> | Mislabe           |                          |            | Power Loss/  | Surge                                   | Other              |
|                          | -              | Inspectio     |                                       | Tube                        |          | Drawing                                 |         | Misrea            |                          |            |              |   |                    |
|                          |                | Marks/Ch      |                                       |                             | oxdot    | Drill Holes                             |         | Off-set           |                          |            |              |   |                    |
|                          | $\sqcup$       | Turning S     |                                       |                             |          | Finish                                  |         | 4                 | Calibration              |            |              |   |                    |
| Į.                       | 1              | Wave/Tw       | ist in Tub                            | oe .                        | ı        | Fit/Function                            | 1       | Out of:           | Sequence                 |            |              |   |                    |

| Work Order ID 1<br>Wednesday, June 04, 2014           |   |                           | *120                  | 113   | 5*                     |        | *            |               |               |                  | Page 2                      |
|---|---|---------------------------|-----------------------|-------|------------------------|--------|--------------|---------------|---------------|------------------|-----------------------------|
| Item ID: D3488-04.  Revision ID: Blade Fittin         | <i>5</i>  |                           | Accept                | *N    | 900                    | 0040   | 100          | <b>)</b> * :  | Setup Sta     | 10               | S1*<br>S2*                  |
| Start Date: 6/04/14 Required Date: 6/04/14 Reference: | <b>Start Qty:</b> 12.00 <b>Req'd Qty:</b> 12.00 | *12*<br>*12*              |                       |       | ist Item ]<br>istomer: |        |              |               | •             | "N               | ·                           |
| Approvals: Process P                                  | Plan:   | Date:                     | Tooling:              |       | D                      | ate:   | _            | F             | tun Sta       | rt *N            | R1*                         |
| QC:   |   | Date:                     | SPC (Y/N):            |       |                        | ate:   |              |               | Sto           | *N               | R2*                         |
| Sequence ID/<br>Work Center ID                        | Operation                                       |                           | Set Up/<br>Run Hours  | 3 · 1 | ool ID                 | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp              |
| *120*   | HAAS CNC VERTICAL                               | MACHINING #1              | 0.00                  |       |                        |        |              | 71            | 1             |                  | 989 14.06.75                |
| HAAS 1<br>HAAS CNC vertical machine #1                | Memo<br>1-Machine a                             | s per Folio FA627 & Dwg I | 0.00<br>034882-Deburr |       |                        |        |              | ,             | ,             |                  | DAS<br>44<br>14/06/26       |
| 420   | 843<br>37<br>86-9                               |                           |                       |       |                        |        | •            |               |               |                  |                             |
| *130<br>*0C   | QC2- Inspect parts off ma                       | achine FAI/FAIB           | 0.00                  |       |                        |        |              | 11            |               |                  | DAS<br>37<br>9-89 / 4.06.25 |
| Quality Control                                       | Wiemo   |                           | 0.00                  |       |                        |        |              |               |               |                  |                             |
| 140   | QC8- Inspect parts - seco                       | nd check                  | 0.00                  |       |                        |        |              |               |               |                  | DAS                         |
| *140*   | Mamo  |                           | 0.00                  |       |                        |        |              |               |               |                  | <b>20</b><br>9-89 14-07-08  |

0.00

Memo

\*140\*

Quality Control

| DQA:   | Q   | lot   | Date:                                  | 14/0  | 0/14     | WORK ORDER NON   | -CC | NE∩I   | MANCE / LIPDAT   | F                                     |   |   | DART  |
|--|-----|---|--|-------|----------|--|-----|--|--|---------------------------------------|---|---|---|
| QA Closed:   | a   | 44  | Date:                                  | 14/   | 7118     | WORK ORDER NON   |     |  | WAREL / OF DATE  |                                       | ork Order up  | date only                                     | AEROSPACE   |
| Work Ord   | er: | 120   | 113                                    | 5     |          | DISPOSITION  |     |  | AG   | AINST DE                              | PARTMENT  | PROCESS                                       |   |
|  |     | D34<br>14 -4  |  |       | 2        | Rework Scrap Use-as-is Suspected Unapproved  |     | Thern  | Machining Sma  | sstube<br>all Fab<br>ishing<br>posite |   | Water Jet d. Eng. Coor. re/Packaging Supplier | Engineering Quality Other   |
| Root<br>Cause  |     | Date  | Step                                   | Qty   | Descr    | iption of work order update or non-conformance   | 1   | nitial<br>ief Eng  | Action<br>Description  |                                       | Sign &<br>Date  | Verification                                  | QC Inspector  |
| Design Doc/Data Equip/Tooling Handling/Pre Material Operator Offset/Setup Process Supplier Training Transport Unapproved | -   | 141/2   | 100                                    |       | Af.      | hole is aff<br>wher 0.012".  | 9.  | 12<br>89   | Acceptable by<br>on test fit   | sed<br>on<br>e                        | 14/1/2<br>DAS<br>37<br>9-89   | SM,<br>14/7/16                                | 747/16  |
| Спарриотоп   | 1   |   | <u></u>                                |       | <u> </u> |  | FA  | ULT CAT  | EGORY  |                                       |   |   |   |
| Landi<br>J.<br>```<br>€3.  |     | Bending Centre No Cracks Crimp/Kin Cuffs Crushing Heat Trea Inspection Marks/Ch | nk/Ripple,<br>t<br>n Strip in<br>atter | /Wave |          | General Bend BOM/Route Broken/Damage/Defect Burrs Contamination Countersink Cut Too Short Drawing Drill Holes Finish |     | Grain Hardwa Inspecti Instruct Misalig Mislabe Misread Off-set | on Incomplete/Unqualifications Incomplete/Unclear<br>Incomplete/Unclear<br>Ined/off center | ed                                    | Outside Dim<br>Over/Under<br>Part Incorred<br>Part Lost/Mi<br>Part Moved<br>Positioned V<br>Power Loss/ | tolerance ci ssing Vrong                      | Pressure/Forced Set-up Temperature/Cure Weld Wrong Stock Pulled Other |
| 1  |     | Wave/Tw   | ist in Tub                             | e     |          | Fit/Function   |     | Out of 9   | Sequence   |                                       |   |   |   |

| Work Order ID | 12013 | 5 |
|---------------|-------|---|
|---------------|-------|---|

\*120135\*

Page 3

Wednesday, June 04, 2014 2:56:40 PM Accept Item ID: D3488-042 \*N900040100\* Setup Start Revision ID: Stop Item Name: Blade Fitting RH **Start Otv: 12.00** \*10\* **Start Date:** 6/04/14 **Cust Item ID:** Required Date: 6/04/14 Reg'd Otv: 12.00 \*19\* Customer: Reference: Start Run Process Plan: Date: Tooling: **Approvals:** Date: Stop Date: OC: SPC (Y/N): Date: Sequence ID/ Operation Tool ID Set Up/ Reject Tool# Plan Accept Reject Insp. **Work Center ID** Description **Run Hours** Code Oty Oty Number Stamp 150 Chemical Conversion Coat per OSI005 4.1 0.00 11 7614-7-11 \*150\* HandFinish 0.00 Memo Hand Finishing White Gloss(Ref:4.3.5.1) per QSI095 4.3-Alum 160 0.00 11 d H-7-14/88 \*160\* Powdercoat 0.00 Memo Powder Coating OVEN TEMPERATURE: FINISH TIME: 170 QC3- Inspect Part Finish 0.00 118H d 11/07/16 \*170\* OC 0.00 Memo Quality Control

15 9-89

| DQA:          |                          |           | Date:      |         |             | ,                            |          |         | _                  |           |              |               |               | RT     |
|---------------|--------------------------|-----------|------------|---------|-------------|------------------------------|----------|---------|--------------------|-----------|--------------|---------------|---------------|--------|
| OA Clasadi    |                          |           | Date:      |         |             | WORK ORDER NON-              | -CC      | ONFO    | RMANCE / UP        |           | ork Order up | ndate only    | AEROS         | SPACE  |
| QA Closed:    |                          |           | Date.      |         |             |                              | _        |         |                    | V         | ork Order up | date only     |               |        |
| Work Orde     | er:                      |           |            |         |             | DISPOSITION                  |          |         |                    | AGAINST D | EPARTMENT,   | PROCESS       |               |        |
|               | •                        |           | ···        |         |             | Rework                       |          |         | Skid-tube          | Crosstube | 7            | Water Jet     | Engineerin    | ıg 🗍   |
| Part N        | lo.                      |           |            |         |             | Scrap                        |          |         | Machining          | Small Fab | Pro          | d. Eng. Coor. | Qualit        | _      |
|               | •                        |           |            |         |             | Use-as-is                    |          | Thern   | noforming          | Finishing | Rec/Sto      | e/Packaging   | Othe          | er 🔃   |
| NCR N         | ю.                       |           |            |         |             | Suspected Unapproved         |          |         | Large Fab          | Composite | ]            | Supplier      |               |        |
| Root          |                          |           |            |         | Desc        | ription of work order update |          | nitial  | Acti               | on        | Sign &       |               |               |        |
| Cause         |                          | Date      | Step       | Qty     | Desci       | or non-conformance           | l        | ief Eng |                    |           | Date         | Verification  | QC Inspe      | ector  |
| Design        |                          |           | Осер       | ~~,     |             | or non-comonitative          | <u> </u> |         |                    |           |              |               |               |        |
| Doc/Data      |                          |           |            |         |             |                              |          |         |                    |           |              |               |               |        |
| Equip/Tooling |                          |           |            |         |             |                              |          |         |                    |           |              |               |               |        |
| Handling/Pre  |                          |           |            |         |             |                              |          |         |                    |           |              |               |               |        |
| Material      |                          |           |            |         |             |                              |          |         |                    |           |              |               |               |        |
| Operator      |                          |           |            |         |             |                              |          |         |                    |           |              |               | - [           |        |
| Offset/Setup  |                          |           |            |         |             |                              |          |         |                    |           |              |               |               |        |
| Process       |                          |           |            |         |             |                              |          |         |                    |           |              |               |               |        |
| Supplier      |                          |           |            |         |             |                              |          |         |                    |           |              |               | ·             |        |
| Training      |                          |           |            |         |             |                              |          |         |                    |           |              |               |               |        |
| Transport     |                          |           |            |         |             |                              |          |         |                    |           |              |               | İ             |        |
| Unapproved    |                          |           |            |         | <u></u>     |                              | <u> </u> |         |                    |           |              |               |               |        |
|               |                          | ···       |            | _       |             |                              | FAI      | ULT CA  | TEGORY             |           | <u> </u>     |               |               |        |
| Landi         | ng G                     | Sear      |            |         | _           | General                      |          | 1       |                    | <u></u>   | -            | _             | <b>-</b> .    |        |
|               |                          | Bending   |            |         |             | Bend                         |          | 1       | Program            | Ļ         | Outside Dim  | ļ-            | Pressure/Ford | ced    |
|               |                          | Centre No | ot Concer  | ntric   |             | BOM/Route                    | ⊢        | Grain   |                    | <u> </u>  | Over/Under   |               | Set-up        |        |
|               |                          | Cracks    |            |         | <u> </u>    | Broken/Damage/Defect         | <u> </u> | Hardwa  |                    |           | Part Incorre | -             | Temperature,  | /Cure  |
| ļ             |                          | Crimp/Kir | rk/Ripple  | /Wave   | $\vdash$    | Burrs                        |          | 1 '     | ion Incomplete/Un  | · —       | Part Lost/Mi | ssing         | Weld          | 5 II I |
| '             |                          | Cuffs     |            |         | <u> </u>    | Contamination                | <u> </u> | 4       | tions Incomplete/U | Inclear   | Part Moved   |               | Wrong Stock   | Pulled |
|               |                          | Crushing  |            |         | <u> </u>    | Countersink                  | L        | 1 '     | gned/off center    | <u> </u>  | Positioned V |               |               |        |
|               |                          | Heat Trea |            |         | _           | Cut Too Short                |          | Mislabe |                    |           | Power Loss/  | Surge [       | Other         |        |
|               | Inspection Strip in Tube |           | <u> </u>   | Drawing | <u> </u>    | Misrea                       |          |         |                    |           | <del></del>  |               |               |        |
|               | Marks/Chatter            |           |            | ļ       | Drill Holes | $\vdash$                     | Off-set  |         |                    |           |              |               |               |        |
|               |                          | Turning S |            |         | <u> </u>    | Finish                       | <u> </u> | 4       | Calibration        |           |              |               | <del></del>   |        |
|               | l .                      | Wave/Tw   | ist in Tub | oe      |             | Fit/Function                 |          | Out of  | Sequence           |           |              |               |               |        |

12.

# \*120135\*

Page 4

| Wednesday, Jun   | ne 04, 2014 2:                             | 56:40 PM   |                      | · / / / · · · · · · · · · · · · · · · · | リいさつ"<br>                   |       |              |               |          |               |                  | Page 4         | ļ                     |
|--|--|--|----------------------|---|-----------------------------|-------|--------------|---------------|----------|---------------|------------------|----------------|-----------------------|
| Item ID: Revision ID: Item Name: Start Date: Required Date: Reference: | D3488-042  Blade Fitting F 6/04/14 6/04/14 | RH  Start Qty: 12.00  Req'd Qty: 12.00                   | *12*<br>*12*         | Accept                                  | *N900 Cust Item I Customer: |       | 10           | <b>N</b> *    | Setup    | Start<br>Stop |                  | S1*<br>S2*     |                       |
| Approvals:   | Process Plan                               | n:   | Date:                | Tooling: SPC (Y/N):                     |                             | ate:  |              |               | Run      | Start<br>Stop | *N               | R1*            |                       |
| Sequence ID/ Work Center II 180 *120* HandFinish Hand Finishing        | D  | Operation Description HandFinishing Memo Install Inserts | as per Dwg D3488     | Set Up/<br>Run Hours<br>0.00            | Tool ID                     | Tool# | Plan<br>Code | Accept<br>Qty | Qty      |               | Reject<br>Number | Insp.<br>Stamp |                       |
| 190 <b>*1 Q</b> QC  Quality Control                                    |  | QC5- Inspect part complet  Memo                          | eness to step on W/O | 0.00                                    |                             |       |              | 11            | b        | 14-           | 7-16             | D <b>V</b> S   | <b>45</b><br><b>9</b> |
| 200 */ON* Packaging Packaging  |  | Identify as per dwg & Stoc                               | k Location: FP-001   | 0.00                                    |                             |       |              | _\\\(\)       | <u> </u> | 4             | 90               | 11/ CF1        | /,,                   |

| DQA:          |                   |            | Date:      |       |             |                              |                  |         |                     |            |               |               | `           | TRAGE              |
|---------------|-------------------|------------|------------|-------|-------------|------------------------------|------------------|---------|---------------------|------------|---------------|---------------|-------------|--------------------|
|               |                   |            |            |       |             | WORK ORDER NON-              | -CC              | ONFO    | RMANCE / UP         |            |               |               | _           | AEROSPACE          |
| QA Closed:    |                   |            | Date:      |       |             |                              |                  |         |                     | W          | ork Order up  | date only     |             |                    |
| Work Orde     | sr.               |            |            |       |             | DISPOSITION                  |                  |         |                     | AGAINST DE | PARTMENT/     | PROCESS       |             | :                  |
| WOIK OIG      | ٠٠٠.              |            |            |       |             | Rework                       | ı                |         | Skid-tube           | Crosstube  | 1             | Water Jet     | 7           | Engineering        |
| Part N        | lo.               |            |            |       | •           | Scrap                        |                  |         | Machining           | Small Fab  | Pro           | d. Eng. Coor. | 7           | Quality            |
|               |                   |            |            |       |             | Use-as-is                    |                  |         | noforming           | Finishing  | 4             | e/Packaging   | ٦           | Other              |
| NCR I         | ۱o. ِ             |            |            |       | <del></del> | Suspected Unapproved         |                  |         | Large Fab           | Composite  | ]             | Supplier      |             |                    |
| Root          |                   |            |            |       | Desci       | ription of work order update |                  | nitial  | Actio               | on         | Sign &        |               |             |                    |
| Cause         |                   | Date       | Step       | Qty   |             | or non-conformance           | Ch               | ief Eng | Descrip             | otion      | Date          | Verification  |             | QC Inspector       |
| Design        |                   |            |            |       |             |                              |                  |         |                     |            |               |               | ļ           |                    |
| Doc/Data      |                   |            |            |       |             |                              |                  |         |                     |            |               |               | 1           |                    |
| Equip/Tooling |                   |            |            | }     |             |                              |                  |         |                     |            |               |               |             |                    |
| Handling/Pre  |                   |            |            |       |             |                              |                  |         |                     |            |               |               |             |                    |
| Material      |                   |            |            |       |             |                              |                  |         |                     |            |               |               |             |                    |
| Operator      |                   |            |            |       |             |                              |                  |         |                     |            |               |               |             |                    |
| Offset/Setup  |                   |            |            |       |             |                              |                  |         |                     |            |               | i             |             |                    |
| Process       |                   |            |            |       |             |                              |                  |         |                     |            |               |               | ĺ           |                    |
| Supplier      |                   |            |            |       |             |                              |                  |         |                     |            |               |               |             |                    |
| Training      |                   |            |            |       |             |                              |                  |         |                     |            |               |               |             |                    |
| Transport     |                   |            |            |       |             |                              | 1                |         |                     |            |               |               |             |                    |
| Unapproved    |                   |            |            |       |             |                              |                  |         |                     |            |               |               | _L          |                    |
| <del></del>   |                   |            |            |       |             |                              | FAI              | ULT CA  | TEGORY              |            |               |               |             |                    |
| Landi         | ng (              | 1          |            |       |             | General                      | _                | 1       |                     | _          | <b>1</b>      |               | <b>-</b> 7. | -                  |
|               |                   | Bending    |            |       |             | Bend                         |                  | 1       | Program             | <u> </u>   | Outside Dim   | <u>-</u>      |             | ressure/Forced     |
|               |                   | Centre No  | ot Concer  | ntric | <u> </u>    | BOM/Route                    | <u> </u>         | Grain   |                     | <u> </u>   | Over/Under    |               | _           | et-up              |
|               |                   | Cracks     |            |       | .           | Broken/Damage/Defect         | <u> </u>         | Hardwa  |                     | ļ          | Part Incorred | <del>-</del>  |             | emperature/Cure    |
|               | -                 | Crimp/Kir  | nk/Ripple  | /Wave | _           | Burrs                        |                  | -       | ion Incomplete/Unc  | · —        | Part Lost/Mi  | ssing         | _           | Veld               |
|               |                   | Cuffs      |            |       | _           | Contamination                |                  | -1      | tions Incomplete/Ur | nclear     | Part Moved    | · L           | \ر          | Vrong Stock Pulled |
|               | $ldsymbol{f eta}$ | Crushing   |            |       | $\vdash$    | Countersink                  | <u> </u>         | -1      | gned/off center     | <u> </u>   | Positioned V  |               | 一.          |                    |
|               |                   | Heat Trea  |            |       |             | Cut Too Short                | $\vdash$         | Mislabe |                     | <u>L</u>   | Power Loss/   | Surge         | 10          | Other              |
|               |                   | Inspection | •          | Tube  |             | Drawing                      |                  | Misrea  |                     |            |               |               |             |                    |
|               | <u> </u>          | Marks/Ch   |            |       |             | Drill Holes                  | _                | Off-set |                     |            |               |               |             |                    |
|               |                   | Turning S  |            |       |             | Finish                       | $\vdash$         | -       | Calibration         |            |               |               |             |                    |
|               |                   | Wave/Tw    | ist in Tub | oe -  |             | Fit/Function                 | $\mathbf{I}_{-}$ | Out of  | Sequence            |            |               |               |             |                    |

Work Order ID 120135 \*120135\* Wednesday, June 04, 2014 2:56:40 PM D3488-042 Item ID: Accept \*N900040100\* Setup Start **Revision ID:** Stop Item Name: Blade Fitting RH 6/04/14 \*19\* Start Date: **Start Otv:** 12.00 **Cust Item ID:** Required Date: 6/04/14 Req'd Oty: 12.00 \*19\* **Customer:** Reference: Start Run Process Plan: **Approvals:** Date: Tooling: Date: Stop OC: Date: SPC (Y/N): Date: Sequence ID/ Operation Tool ID Tool # Plan Set Up/ Accept Reject Reject Insp. **Work Center ID** Description Run Hours Qty Number Qty Code Stamp

0.00

0.00

QC21- Final Inspection - Work Order Release

Memo

210

\*210\*

**Quality Control** 

MUJ 14-07-16

Page 5

| DQA:          |      |            | Date:      |       | <del></del> |                              |     |         |                    |            |              |               | RAC"            | 7   |
|---------------|------|------------|------------|-------|-------------|------------------------------|-----|---------|--------------------|------------|--------------|---------------|-----------------|-----|
| OA Classide   |      |            | Date:      |       |             | WORK ORDER NON-              | -CC | ONFO    | RMANCE / UP        |            | ork Order up | odate onlý. F | AEROSP)         | CE  |
| QA Closed:    |      |            | Date.      |       |             |                              | _   |         |                    |            | · · ·        |               |                 |     |
| Work Orde     | er:  |            |            |       |             | DISPOSITION                  |     |         |                    | AGAINST DE | PARTMENT,    | /PROCESS      |                 |     |
|               | •    |            |            |       |             | Rework                       |     |         | Skid-tube          | Crosstube  | 1            | Water Jet     | Engineering     | ٦   |
| Part N        | lo.  |            |            |       |             | Scrap                        |     |         | Machining          | Small Fab  | Pro          | d. Eng. Coor. | Quality         |     |
|               | •    |            |            |       |             | Use-as-is                    |     | Thern   | noforming          | Finishing  | Rec/Sto      | e/Packaging   | Other           |     |
| NCR 1         | ۱o.  |            | · /····    |       |             | Suspected Unapproved         |     |         | Large Fab          | Composite  |              | Supplier      |                 |     |
| Root          |      |            |            |       | Desci       | ription of work order update |     | Initial | Acti               | on         | Sign &       |               |                 |     |
| Cause         |      | Date       | Step       | Qty   |             | or non-conformance           | Ch  | ief Eng | Descri             | ption      | Date         | Verification  | QC Inspecto     | or  |
| Design        |      |            |            |       |             | 1                            |     |         |                    |            |              |               |                 |     |
| Doc/Data      |      |            |            |       |             |                              |     |         |                    |            |              |               |                 |     |
| Equip/Tooling |      |            |            |       |             |                              |     |         |                    |            |              |               |                 |     |
| Handling/Pre  |      |            |            |       |             |                              |     |         |                    |            |              |               |                 |     |
| Material      |      |            |            |       |             |                              |     |         |                    |            |              |               |                 |     |
| Operator      |      |            |            |       |             |                              |     |         |                    |            |              |               |                 |     |
| Offset/Setup  |      |            |            |       |             |                              |     |         |                    |            |              |               |                 |     |
| Process       |      |            |            |       |             |                              |     |         |                    |            |              |               |                 |     |
| Supplier      |      | ,          |            |       |             |                              | l   |         |                    |            |              |               |                 |     |
| Training      |      |            |            |       |             |                              |     |         |                    |            |              |               |                 |     |
| Transport     | ·    |            |            | :     |             |                              |     |         | ·                  |            |              |               |                 |     |
| Unapproved    |      |            |            |       | •           |                              |     |         | <u></u>            |            | <u></u>      |               |                 |     |
|               |      |            |            |       |             |                              | FA  | ULT CA  | TEGORY             |            |              |               | 1886            |     |
| Landi         | ng ( | Gear       |            |       |             | General                      |     | ,       |                    | _          | _            |               | <b>-</b>        |     |
|               | _    | Bending    |            |       |             | Bend                         |     | Folio/F | Program            | L          | Outside Dim  | <b>⊢</b>      | Pressure/Forced |     |
|               |      | Centre No  | ot Concer  | ntric |             | BOM/Route                    | ļ   | Grain   |                    | _          | Over/Under   | <b>⊢</b>      | Set-up          |     |
|               |      | Cracks     |            |       |             | Broken/Damage/Defect         |     | Hardwa  | are                |            | Part Incorre | <u> </u>      | Temperature/Cu  | re  |
|               |      | Crimp/Kir  | nk/Ripple  | /Wave | L           | Burrs                        | L   | Inspect | ion Incomplete/Un  | qualified  | Part Lost/Mi | ssing         | Weld            |     |
|               |      | Cuffs      |            |       |             | Contamination                |     | 4       | tions Incomplete/U | nclear     | Part Moved   | L             | Wrong Stock Pul | led |
|               |      | Crushing   |            |       |             | Countersink                  | L   | Misali  | gned/off center    |            | Positioned V |               | <del>_</del>    |     |
|               |      | Heat Trea  | at         |       |             | Cut Too Short                |     | Mislab  | eled               |            | Power Loss/  | Surge         | Other           |     |
|               |      | Inspection | n Strip in | Tube  |             | Drawing                      |     | Misrea  | d                  |            |              |               |                 |     |
|               |      | Marks/Ch   | natter     |       |             | Drill Holes                  |     | Off-set |                    |            |              |               |                 |     |
|               |      | Turning S  | equence    |       |             | Finish                       |     | Out of  | Calibration        |            |              |               | <u> </u>        |     |
| •             |      | Wave/Tw    | ist in Tub | эе    |             | Fit/Function                 |     | Out of  | Sequence           |            |              |               |                 |     |

Wednesday, June 04, 2014 2:56:39 PM

Parent Item Name: Blade Fitting RH

Work Order ID: 120135

\*120135\*

Parent Item:

D3488-042

\*D3488-042\*

**Start Date:** 6/04/14

ς,

Required Date: 6/04/14

**Start Qty: 12.00** 

Required Oty: 12.00

Comments:

IPP Rev:A New Issue 06-02-28 JLM

IPP Rev:B As per Rev B 06-03-30 JLM

IPP Rev:C Now On Doosan Lathe JLM Verified BY:DD

| Component Item ID/<br>Item Name  | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status |
|----------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
| ALS7-1032-225                    | AELS8-1032-225         | Purchased     | No          |                     |                  |                 | Each               | 1,167.000      |             | 48 44        | <i></i>       |                |        |
| *AI S7-10:<br>AKSH- (            | 32-225*                | $\Rightarrow$ |             |                     |                  |                 |                    |                | **          | <u>lel</u>   | 14/07         | 7/16           |        |
| ALSH- 1                          | 032-225                | -             |             | Location            | <u>1</u>         | Loc (           | Oty                | Loc Code       |             |              |               |                |        |
|                                  |                        |               |             | FG                  | 118520           |                 | 80<br>80           |                | _           | 10           |               |                |        |
|                                  |                        |               |             | FP001               | 110020           | 1               | 1000               |                |             |              |               |                |        |
|                                  |                        |               |             |                     | m128649          |                 | 1000               |                |             |              |               |                |        |
|                                  |                        |               |             | ST280               |                  |                 | 87                 |                |             |              |               |                |        |
|                                  |                        |               |             |                     | m128179          |                 | 87                 |                | _           | x41          | •             |                |        |
| 06103-003                        |                        | Manufactured  | No          |                     |                  |                 | Each               | 36.0000        |             | 12           | 1.1           |                |        |
| *D6103-00 Round Billet, Aluminum | 73*                    |               |             |                     |                  |                 |                    |                | **          |              | SL            | 14-6-2         | 12     |
|                                  |                        |               |             | Location            | <u>l</u>         | Loc (           | <u>Oty</u>         | Loc Code       |             |              |               |                |        |
|                                  |                        |               |             | MAT043              |                  |                 | 36                 |                |             |              |               |                |        |
|                                  |                        |               |             |                     | 113646           |                 | 12                 |                |             |              |               |                |        |
|                                  |                        |               |             |                     | 115942           |                 | 4                  |                |             |              |               |                |        |
|                                  |                        |               |             |                     | 116860           |                 | 20                 |                |             | <u> 12</u>   |               |                |        |

| DQA:               |          |            | Date:      |       |       |                              |  |                      | •                   |            |               |               | DART                                  |
|--------------------|----------|------------|------------|-------|-------|------------------------------|--|----------------------|---------------------|------------|---------------|---------------|---------------------------------------|
|                    |          |            | 5-4        |       |       | WORK ORDER NON-              | -CC  | ONFO                 | RMANCE / UPI        |            | ark Ordar un  | data anly     | AEROSPACE                             |
| QA Closed:         |          |            | Date:      |       |       |                              |  |                      |                     | VV         | ork Order up  | date only     | <u> </u>                              |
| Work Orde          | ar.      |            |            |       |       | DISPOSITION                  |  |                      |                     | AGAINST DE | PARTMENT      | PROCESS       |                                       |
| Work Orac          | • • •    |            |            |       | _     | Rework                       | 1  | •                    | Skid-tube           | Crosstube  | ٠.            | Water Jet     | Engineering                           |
| Part N             | lo.      |            |            |       |       | Scrap                        |  |                      | Machining           | Small Fab  | Pro           | d. Eng. Coor. | Quality                               |
|                    | •        |            |            |       |       | Use-as-is                    |  |                      | noforming           | Finishing  | Rec/Stor      | e/Packaging   | Other                                 |
| NCR N              | ۱o.      |            |            |       |       | Suspected Unapproved         |  |                      | ~ <del>-</del> -    | Composite  |               | Supplier      |                                       |
| Post               |          |            |            |       | Dosci | ription of work order update |  | initial              | Actio               | nn .       | Sign &        |               |                                       |
| Root               |          | Date       | Ston       | Otv   | Desci | or non-conformance           | l  | iiilliai<br>iief Eng |                     | •          | Date          | Verification  | QC Inspector                          |
| Cause              | -        | Date       | Step       | Qty   |       | Of Holl-comormance           | Cii  | ilei Liig            | Descrip             | 70011      | Date          | Vermedion     | QC IIISPECTOI                         |
| Design<br>Doc/Data |          |            |            |       |       |                              |  |                      |                     |            |               |               |                                       |
| Equip/Tooling      | $\vdash$ |            |            |       |       |                              |  |                      |                     |            |               |               |                                       |
| Handling/Pre       |          |            |            |       |       |                              |  |                      |                     |            |               |               |                                       |
| Material           |          |            |            |       |       |                              |  |                      |                     |            | ]             |               |                                       |
| Operator           |          |            |            |       |       |                              |  |                      |                     |            |               |               |                                       |
| Offset/Setup       |          |            |            |       |       |                              |  |                      |                     |            | ]             |               |                                       |
| Process            |          |            |            |       |       |                              |  |                      |                     |            |               |               |                                       |
| Supplier           |          |            |            |       |       |                              |  |                      |                     |            |               |               |                                       |
| Training           |          |            |            |       |       |                              | l  |                      |                     |            |               |               |                                       |
| Transport          |          |            |            |       |       |                              |  |                      |                     |            |               |               |                                       |
| Unapproved         |          |            | •          |       |       |                              | ł  |                      |                     |            |               |               |                                       |
|                    |          |            |            |       |       |                              | FAI  | ULT CA               | TEGORY              |            |               |               |                                       |
| Landi              | ng (     | Gear       |            |       |       | General                      |  |                      |                     |            |               | _             |                                       |
|                    |          | Bending    |            |       |       | Bend                         |  | Folio/F              | Program             |            | Outside Dim   | ensions       | Pressure/Forced                       |
|                    |          | Centre No  | ot Concer  | ntric |       | BOM/Route                    |  | Grain                |                     |            | Over/Under    | tolerance     | Set-up                                |
|                    |          | Cracks     |            |       | L     | Broken/Damage/Defect         |  | Hardwa               | are                 |            | Part Incorred | i _           | Temperature/Cure                      |
|                    |          | Crimp/Kir  | nk/Ripple  | /Wave | · L   | Burrs                        |  | Inspect              | ion Incomplete/Unq  | ualified   | Part Lost/Mi  | ssing         | Weld                                  |
|                    |          | Cuffs      |            |       |       | Contamination                |  | 4                    | tions Incomplete/Un | nclear     | Part Moved    | L             | Wrong Stock Pulled                    |
|                    |          | Crushing   |            |       |       | Countersink                  | _  | -1                   | gned/off center     |            | Positioned V  |               | <b>¬</b>                              |
|                    |          | Heat Trea  |            |       |       | Cut Too Short                | $ldsymbol{le}}}}}}}$ | Mislabe              |                     |            | Power Loss/   | Surge         | Other                                 |
|                    |          | Inspection | n Strip in | Tube  |       | Drawing                      | <u></u>  | Misrea               |                     |            |               |               |                                       |
|                    |          | Marks/Ch   | natter     |       |       | Drill Holes                  | L_   | Off-set              |                     |            |               |               |                                       |
|                    |          | Turning S  |            |       |       | Finish                       | $\vdash$   | 4                    | Calibration         |            |               |               | · · · · · · · · · · · · · · · · · · · |
|                    |          | Wave/Tw    | ist in Tub | oe .  |       | Fit/Function                 |  | Out of               | Sequence            |            |               |               |                                       |

| DART AEROSPACE LTD   | Work Order:  | 120135      |
|--|--------------|-------------|
| Description: Blade Fitting, RH / Turning Detail for D3488-1/-2 | Part Number: | D3488-2     |
| Inspection Dwg: D3488 / DSK101 Rev: B / D                      |              | Page 1 of 2 |

## FIRST ARTICLE INSPECTION CHECKLIST

X First Article Prototype

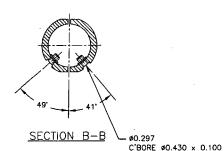
| Drawing<br>Dimension | Tolerance          | Actual Dimension | Accept | Reject | Method of Inspection | Comments |
|----------------------|--------------------|------------------|--------|--------|----------------------|----------|
| Lathe Section        |                    |                  |        |        |                      |          |
| Ø2.150               | +/-0.005           | 2152             |        |        | Vern                 | 77-10    |
| Ø2.780               | +/-0.005           | 2778             |        |        |                      | 24.10    |
| Ø3.125               | +/-0.010           | 3.123            |        |        | ~                    |          |
| Ø3.346               | +/-0.010           | 3 345            |        | ****** | `                    |          |
| 0.125 x 45°          | +/-0.010 x +/-0.1° | 125 x45°         |        |        | -                    |          |
| 8.000                | +0.030/-0.000      | 8.000            |        |        |                      | CNC-62   |
| 9.250                | +/-0.010           | 9.249            | //     |        | H-G                  |          |
| 0.188                | +/-0.010           | -188             |        |        | H-G                  |          |
| R0.032               | +/-0.010           | -032             | /      |        |                      |          |
| R0.062               | +/-0.010           | - 062            | //     |        |                      |          |
| Ø0.297               | +0.005/-0.001      | -300             |        |        | Vern                 | 11-10    |
| Ø0.430               | +/-0.010           | .431             |        |        | -                    |          |
| 0.100                | +/-0.010           | 100              |        |        | ^                    |          |
| 0.125                | +/-0.010           | -130             |        |        | ~                    |          |
| 2.620                | +/-0.010           | 2.619            |        |        | ~                    |          |
| 3.500                | +/-0.010           | 3.500            |        |        | ~                    | :        |
| 1.005                | +/-0.010           | 1.005            | /      |        | H-CT                 |          |
| Ø0.484               | +0.005/-0.001      | 486              |        |        | Vern                 | ~ /      |
| 1.180                | +/-0.010           | 1.180            | //     |        | ~                    |          |
| 3.150                | +/-0.010           | 3.150            |        |        | ~                    |          |
| 3.070                | +/-0.010           | 3.070            |        |        | H-6                  |          |
| R0.063               | +/-0.010           | -063             | /      |        |                      |          |
|                      |                    |                  |        |        |                      |          |
|                      |                    |                  |        | -      |                      |          |

| DART AEROSPACE LTD   | Work Order:  | 120135      |
|--|--------------|-------------|
| Description: Blade Fitting, RH / Turning Detail for D3488-1/-2 | Part Number: | D3488-2     |
| Inspection Dwg: D3488 / DSK101 Rev: B / D                      |              | Page 2 of 2 |

| Drawing<br>Dimension                  | Tolerance     | Actual Dimension  | Accept     | Reject | Method of Inspection | Comments |
|---------------------------------------|---------------|-------------------|------------|--------|----------------------|----------|
|                                       |               | Milli             | ng Section | 1      |                      |          |
| Ø0.508                                | +0.006/-0.001 | .508              |            |        | Pin                  | GAUGE    |
| 0.750                                 | +/-0.010      | .750              | ~          |        | DR 16                | 8"UERN   |
| 1.500                                 | +/-0.010      | 1.500             | _          |        | ,,                   | 11       |
| 11.18                                 | +/-0.030      | 11.183            | _          |        | HEIGHT               | Gmue     |
| R0.062                                | +/-0.010      | R.062             | -          |        | Rmo                  | GALLE    |
| 0.125                                 | +/-0.010      | .124              |            |        | DRIL                 | BUERN.   |
| 0.590                                 | +/-0.010      | `2 <b>&amp;</b> d |            |        | DR 16                | 8 veren  |
| 0.793                                 | +/-0.010      | .800              |            |        | 1                    | 1        |
| 1.351                                 | +/-0.010      | 1.351             | -          |        |                      |          |
| 1.317                                 | +/-0.010      | 1.310             | -          |        |                      |          |
| 1.802                                 | +/-0.010      | 1.804             | /          |        | HETGHT               | Comune.  |
| · · · · · · · · · · · · · · · · · · · |               |                   |            |        |                      |          |
|                                       |               |                   |            |        |                      |          |

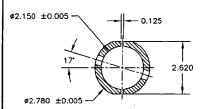
|              |                 |             | DAG               |                     |     |
|--------------|-----------------|-------------|-------------------|---------------------|-----|
| Measured by: | 9-80            | Audited by: | <b>20</b><br>9-89 | Prototype Approval: | N/A |
| Date:        | 14-6-22 14.6.25 | Date:       | 14-07-08          | Date:               | N/A |

| Rev | Date     | Change                  | Revised by | Approved |
|-----|----------|-------------------------|------------|----------|
| _ A | 06.03.31 | New Issue               | KJ/JLM     |          |
| В   | 08.09.19 | Reformat P/O D3488-042  | KJ/JLM LA  | -1       |
| С   | 08.12.02 | Dimension 8.000 removed | KJ/JLM     |          |



SHOP COPY **RETURN TO** ENGINEERING UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER NO. 120135 MLJ (4-06-05

INSTALL ALS4-1032-225 (OR AKS4-1032-225 OR ALS7-1032-225 OR AKS7-1032-225) INSERTS AFTER FINISH (4 PLACES)



SECTION A-A

#### 03488-041/-042 BLADE FITTING ASSEMBLY PARTS LIST

| QTY<br>-041 | QTY<br>-042 | PART NUMBER   | DESCRIPTION                 |
|-------------|-------------|---|-----------------------------|
| X           |             | D3488-041   | BLADE FITTING ASSEMBLY (LH) |
|             | X           | D3488-042   | BLADE FITTING ASSEMBLY (RH) |
| 1           |             | D3488-1   | BLADE FITTING (LH)          |
|             | 1           | D3488-2   | BLADE FITTING (RH)          |
| 4           | 4           | ALS4-1032-225<br>or AKS4-1032-225<br>or ALS7-1032-225 | INSERT                      |
|             | ı           | or AKS7-1032-225                                      |                             |

#### D3488-041/-042 BLADE FITTING

MATERIAL: MAKE D3488-1/-2 FROM ALUMINUM 7075-T7351 ROUND BAR

PER QQ-A-225/9

(REF. DART MATERIAL SPEC M7075T73R)

FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 2)

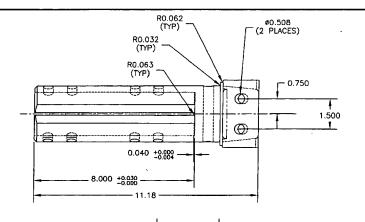
POWDER COAT WHITE (REF 4.3.5.1) PER DART QSI 005 4.3

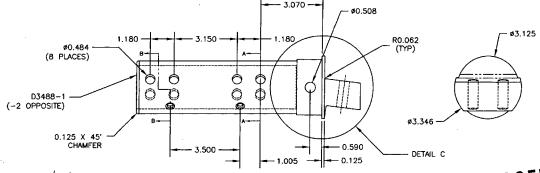
BREAK UNMARKED SHARP EDGES 0.010 TO 0.020

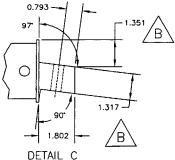
INSTALL INSERTS AFTER POWDER COAT

ALL DIMENSIONS ARE IN INCHES 5)

6) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED







D3488-041 SHOWN (D3488-042 OPPOSITE)

06.03.15

ELN #739

CHANGE THICKNESS В 06.03.15 05.12.20 NEW ISSUE DESIGN DART AEROSPACE USA, INC. PH PH DART REV. B D3488 SHEET 1 OF DATE TITLE SCALE

BLADE FITTING

### COPYRIGHT @ 2005 BY DART AEROSPACE USA, SIC.

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPAGE USA, INC.